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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex Parte BYUNG-SUN CHOI

Appeal 2009-003211
Application 10/608,411
Technology Center 2600

Oral Hearing Held: September 22, 2009

Before ROBERT E. NAPPI, MARC S. HOFF, and THOMAS S. HAHN, *Administrative Patent Judges.*

ON BEHALF OF THE APPELLANT:

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The above-entitled matter came on for hearing Tuesday, September 15, 2009, commencing at 9:10 a.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia, before Cynthea Sydnor-Thomas, Notary Public.

JUDGE NAPPI: Twenty minutes. You may begin whenever.

MR. LEE: Thank you. May it please the Board, my name is Seok-Won Stuart Lee. I'm here on behalf of the Appellant Samsung Electronics Company, Limited, for Application Serial No. 10/608,411.

Before I go into the arguments, I'd like to provide a little roadmap of what I'd like to explain. First, I'd like to explain briefly the technology involved and also the technology of the inventors and explain how Tajime, the reference cited by the Examiner, fails to teach, disclose or suggest the invention as claimed and also explain how the Examiner's proffered motivation to combine is unsupportable.

As, you know, we all know, motion video is actually a series of still images. You have a series of still images that are displayed in sequence that provides an illusion of a motion video, and in order to store such a series of still images into electronic form, you can possibly store every single picture and every single -- the data in every single pixel of every still image or every picture, but that would take up an inordinate amount of space, or it would be unwieldy. It would be very large, you know, say 100 megabytes. And there are a lot of technologies out there to encode the sequence of pictures so that you have a smaller size, and what you would do is on -- for every picture you would encode it into using various techniques, and as a result, you have the video in a format that's of a more manageable size, let's say, for example, 10 megabytes instead of 100 megabytes.

And what the Inventor's technology involves is called transcoding. So even though you have a video that's let's say 10 megabytes, that may still be too large. You may want to have it in a smaller format. That is, you may want it to be a smaller size like 1 megabyte, and what you do is called

transcoding. And what that entails is you take the encoded video, and you decode it so you reconstruct the still images, the still pictures, more or less. You might have some losses. But -- and with the reconstructed pictures you would re-encode those pictures using different parameters or perhaps using different encoding methodology, so you have a much smaller picture. And what has been done, what's conventional, is to, you know, if you have a series of pictures. Let's say you're encoding one particular picture. What has been done in the past is to look at the remaining pictures and use some information from the remaining pictures to encode, to set the parameters to encode the current picture. And specifically what is involved is complexity. You would look at the complexity of the subsequent pictures to determine how you want to encode the current picture.

Now what the Inventors have come up with is this novel idea of when you're encoding this current picture, you would look at the complexity of the previous picture that was encoded, and specifically what's involved is looking at the complexity of the unencoded previous picture and the complexity of the decoded previous picture. Those two complexities in conjunction with the complexity of the unencoded current picture are used to come up with a value that's used to control the bit rate or how much memory the current picture would take.

And, you know, how does this relate to the specific claim language. Well, if I may direct your attention to Claim 1, Claim 1 relates to a transcoding apparatus. It has several elements, and it has a video decoding unit, complexity estimation unit and a few other units. What I would direct your attention to is the complexity estimation unit as -- which is recited as the complexity estimation unit which estimates complexity of a current

picture among the decoded pictures to encode the current picture. And if I may direct your attention to the last paragraph, the wherein clause, that fleshes it out a little bit more. That wherein clause explains that the complexity estimation unit calculates complexity of a picture to be currently encoded using complexity of decoded previous and current pictures, output from the video decoding unit, and complexity of an encoded previous picture output from the video encoding unit.

With that, it's the Examiner's position that a reference renders obvious Claim 1. This reference is the Tajime reference, and the Examiner appears to concede that there is no single embodiment in Tajime which discloses or suggests or renders obvious the invention claimed in Claim 1. So the Examiner argues that the combination of what's disclosed in Figure 1 and the combination of the second embodiment shown in Figure 2, that such a combination would render Claim 1 obvious. Well, Appellant respectfully disagrees.

Let's look at Figure 1. If I may direct your attention to Figure 1 of Tajime, Tajime, you know, relates to a coding device, and its goals involve reducing processing delay and increasing processing efficiency. And Figure 1 of Tajime, at the bottom left-hand corner you have the input bit stream, and this is where the encoded video is received. And the encoded video is received at the decoding path section 11 which decodes the video. And some of the values pertaining to the input bit stream are input to what's called the complexity measured computer means which is right above the decoding path section. And the Examiner takes the position that the complexity measure computing means discloses the calculation of some of the complexity values that are recited in the Claim. But if you -- if one is to

look at Tajime, and one would read that the complexity measure computing means 101 calculates the complexity of a group of pictures and the complexity of all pictures. And so, you know, one might say okay, what does that mean? Does -- are we talking about calculating a number of complexities, and that would be a group, a complexity of a group of pictures?

Well, Tajime explains in detail in column 9. There are some equations 1 through 6, and these equations explain in detail how the complexity of the group of pictures and the complexity of the -- of all the pictures are calculated, and by looking at these formulas, one can see that in calculating the complexity of group of pictures it does not calculate, Tajime does not disclose calculating complexity of one of the group of pictures and another of the group of pictures, but rather it takes certain values from all the pictures of the group of pictures, and comes up with a single complexity value that is representative of all the pictures in the group. And furthermore, the calculation of the complexity for all the pictures that's shown in equation 6, that has basically the same formulation as the calculation of the complexity for the group of pictures which is shown in equation 3. And again here what --

JUDGE NAPPI: Counsel, may I ask you a quick question here?

MR. LEE: Sure.

JUDGE NAPPI: How does Tajime determine how many pictures are in a group? Can a group be just one picture? In which case wouldn't Tajime teach calculating the complexity of one image?

MR. LEE: I think -- it's my understanding that the group of pictures is more than one picture. The -- if you look -- if one is to look at equations 1

and 2, it discloses calculating the sum of certain values. Equation 1 explains that one would add up the -- what's called the quantizer step size cumulative value Q of OJ for a number of macro blocked and --

JUDGE NAPPI: But the question is how does it get that higher number of summation? I mean you can write a summation symbol of 1 to J and then turn around and say J is equal to 2, so you got 1 to 2, so you're summing over 1 picture image.

MR. LEE: That can be a possibility, but we would submit that there would be no point in having a summation. I think the technology involves video compression and in the context of MPEG technology, and a group of pictures is known by one skilled in the art to refer to more than a single picture.

JUDGE NAPPI: Well, I'm looking in column 7 of the reference.

MR. LEE: Yes.

JUDGE NAPPI: And you know, this was just a quick scan for me to try to find where it was as I was asking a question. I'm looking like in column 7 around line 25, and they seem to indicate that a group may be one picture.

MR. LEE: Column 7, line 25?

JUDGE NAPPI: Around 25 to 30. Actually, maybe you should start on line 30 to, "Apart from this, as a picture group unit, there are a plurality of picture groups containing one image predicted within a frame or one picture."

MR. LEE: I think what that -- as best I understand, I believe what that's discussing is you may have -- you will have a number of pictures, but

within each picture you had the same image. I would think that that's what Tajime is disclosing because --

JUDGE NAPPI: Kind of like if you had a still image being displayed in video would keep the general --

MR. LEE: Right, right. Because it says, "Apart from this, as a picture group unit, there are a plurality of picture groups containing one image predicted within a frame or one picture or pictures in a given time." So I believe that group as used by Tajime and also in view of the equations involves a plurality of pictures.

JUDGE HOFF: So in your opinion, picture group complexity measure XT reflects the complexity of --

MR. LEE: A group of --

JUDGE HOFF: -- the picture group unit referred to here in column 7?

MR. LEE: I believe so. It's a reflection of the complexity of the picture group and not the --

JUDGE HOFF: I want to be -- the reason I'm being precise is it says, "picture group unit which is made up of a plurality of picture groups."

MR. LEE: To be precise, it appears that the picture group unit may be comprised of multiple -- a plurality of groups within one group unit.

So Tajime admittedly disclosed calculating some of a complexity value, but it is not complexity value of a single picture, and even looking at the equations, even trying to factor out a number of values that would reflect a complexity of a single picture from equation 306 that's -- I don't think the Examiner has shown how these complexity -- this complexity value would reflect the complexity of a single picture nor has -- have we been able to

determine how one would be able to say that this complexity value includes the complexity of a single picture.

And Figure 2 is essentially -- is in many ways similar to what's in Figure 1 in that in Figure 2 you have the encoded image that's received by a decoding path section, that's received by another compensation section, and then the coding path section, it outputs certain values regarding the re-encoded pictures that's received by the again complexity measure computing means 101 which again calculates the complexity of a group of pictures and a complexity of all the pictures. And therefore, the combination of Figure 1 and 2 cannot possibly disclose or suggest the complexities -- complexity values recited in the Claim.

And furthermore, we would submit that there's no motivation to combine. You know, even if the teachings of Figure 1 and Figure 2 in two separate embodiments can be combined, the Examiner provides certain motivation to combine these two embodiments. The Examiner mentions shortening of processing delay, improvement of picture quality and improvement of encoding efficiency. But if one were to combine these two embodiments, then you would end up increasing -- actually doubling the number of calculations that would be required to process the video. You would have to calculate the complexity of two sets of complexity values, one for the video that's been decoded and then taking what's disclosed in Figure 2 you have to -- you would have to calculate the complexity values for another set of pictures, the set of pictures that have been re-encoded. So Appellant is at a loss as to how this motivation is supportable given that the combination of Figures 1 and 2 would in all likelihood increase the processing delay and degrade any encoding efficiency.

And furthermore, Applicant would submit that KSR held that a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. As submitted by the Appellant, there is no explanation of how the complexity measure computing means 101 would calculate the claimed complexity of a picture to be currently encoded using complexity of decoded previous and current pictures, output of the video decoding unit and complexity of an encoded previous picture, complexity of an encoded previous picture output from the video encoding unit. I think the only predictable result that would come about would be increasing the amount of processing that's required, increasing the delay, and the predictable result that the Examiner is espousing of increased efficiency simply isn't there.

As -- in conclusion, Appellant submits that claims of the Application invention as claimed are patentable over Tajime and that the Examiner's motivation to combine the teachings of two separate embodiments of Tajime is not supportable.

JUDGE NAPPI: Any questions?

JUDGE HOFF: No.

JUDGE NAPPI: Any questions?

JUDGE HAHN: I would appreciate some discussion regarding using complexity of a decoded previous and current picture, that seems to be multiple pictures, to calculate a complexity for a picture according to the Claim, and Tajime is using multiple pictures to calculate a complexity. Would you address that?

MR. LEE: I think that is one possible interpretation, but the Appellant would submit that that the wherein clause also talks about complexity of an

encoded previous picture, and that's one aspect that Tajime is deficient on and that Tajime discloses calculating complexity of a group of pictures or all the pictures. The intent of the Applicant with to respect that language that you mentioned is that the complexity estimation unit calculates the complexity of decoded previous picture and the complexity of the decoded current picture.

JUDGE HAHN: It does seem to be multiple pictures.

MR. LEE: I can only state what the intent of the Applicant and now -- but give -- but what Appellant would submit is that in the wherein clause it does talk about complexity of an encoded previous picture.

JUDGE HAHN: Thank you.

JUDGE NAPPI: Thank you very much, sir.

MR. LEE: Thank you, Your Honors.

(Whereupon, the proceedings, at 9:30 a.m., were concluded.)